



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/704,733	11/03/2000	Susan D. Allen	FSU-1	7240

34610 7590 06/19/2003

FLESHNER & KIM, LLP
P.O. BOX 221200
CHANTILLY, VA 20153

EXAMINER

KAO, CHIH CHENG G

ART UNIT	PAPER NUMBER
----------	--------------

2882

DATE MAILED: 06/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/704,733

Applicant(s)

ALLEN, SUSAN D.

Examiner

Chih-Cheng Glen Kao

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 and 36-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 and 36-45 is/are rejected.
- 7) ☒ Claim(s) 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 11.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement filed 6/21/2002, 10/31/2002, and 3/28/03 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but information referred to therein has not been considered.

Specification

2. The disclosure is objected to because of the following informalities: the replaced paragraph at page 21, lines 7-12, as recited on Page 4 of the Amendment filed 4/9/03 and as filed in the marked-up copy on Page 3 of the Amendment filed 4/9/03, recites "a controller 120", which refers to Figure 13. However, the controller is labeled #130 in Figure 13. This objection may be obviated by replacing "120" with - 130 - in the phrase "a controller 120" as recited above in the specification. Appropriate correction is required.

Claim Objections

3. Claim 14 is objected to because of the following informalities with regards to lack of antecedent basis problems that appear to be minor draft errors: lines 1-2, "the plurality of selectively controllable light sources". This objection may be obviated by replacing "plurality

Art Unit: 2882

of' with - -one or more- -. For purposes of examination, the claim will be treated as such.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 3-7, 10-12, 15, 20, 24, 36, and 38-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freier et al. (US Patent 6301418).

5. Regarding claim 1, Freier et al. discloses an apparatus comprising one or more optical fibers or waveguides (Fig. 1, #100).

However, Freier et al. does not disclose one or more tap structures formed in the waveguide so that, when light travels through, a desired illumination pattern is created by scattering, diffraction, reflection and/or refraction of portions of light through the tap in this embodiment.

Freier et al. teaches one or more tap structures (Fig. 5a, #108) formed in the waveguide so that, when light travels through, a desired illumination pattern (Fig. 7-9) is created by scattering, diffraction, reflection and/or refraction of portions of light (col. 5, lines 15-19) through the tap in another embodiment.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made to have the taps of Freier et al. with the device of Freier et al., since one would be motivated to have these taps to increase scattering of light (col. 5, lines 14-19) in the illumination device as implied from Freier et al.

With regards to the taps being modeled or formed by using pattern parameters determined by modeling the desired illumination pattern, the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, these limitations have not been given patentable weight.

6. With regards to claims 3 and 4, Freier et al. suggests a device as recited above.

However, Freier et al. does not specifically disclose the illumination pattern in the shape of an arc or cylinder in this embodiment.

Freier et al. further discloses the illumination pattern in the shape of an arc or cylinder (Fig. 7, #118) in another embodiment.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the arc or cylinder pattern of Freier et al. with the suggested device of Freier et al., since one would be motivated to have these patterns for light extraction purposes such as display signs or lamps for people to see as implied from Freier et al. (col. 1, lines 25-30).

7. With regards to claim 5, Freier et al. suggests a device as recited above.

However, Freier et al. does not specifically disclose the illumination pattern as generally conical in shape in this embodiment.

Freier et al. further discloses the illumination pattern as generally conical in shape (Fig. 6, #118) in another embodiment.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the conical pattern of Freier et al. with the suggested device of Freier et al., since one would be motivated to have these patterns for light extraction purposes such as display signs or lamps for people to see as implied from Freier et al. (col. 1, lines 25-30).

8. With regards to claim 6, Freier et al. suggests a device as recited above.

However, Freier et al. does not specifically disclose one or more reflective surfaces within the waveguide, so that the reflected beam travels in a direction substantially opposite the original direction of travel of the beam in this embodiment.

Freier et al. further discloses one or more reflective surfaces within the waveguide, so that the reflected beam travels in a direction substantially opposite the original direction of travel of the beam (Fig. 18, #130, and col. 8, lines 4-15) in another embodiment.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the reflective surface of Freier et al. with the suggested device of Freier et al., since one would be motivated to incorporate this to redirect light in a desired direction in a device such as a lamp (col. 8, lines 4-15) as implied from Freier et al.

9. With regards to claim 7, Freier et al. suggests a device as recited above.

However, Freier et al. does not specifically disclose asymmetrical taps in this embodiment.

Art Unit: 2882

Freier et al. further discloses asymmetrical taps (col. 4, lines 62-67) in another embodiment.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have asymmetrical taps of Freier et al. with the suggested device of Freier et al., since one would be motivated to incorporate this to generate significantly more light scattering (col. 4, lines 62-67) as implied from Freier et al.

10. With regards to claim 10, Freier et al. suggests a device as recited above.

However, Freier et al. does not specifically disclose taps in an array along a length of the waveguide in this embodiment.

Freier et al. further discloses taps in an array along a length of the waveguide (Fig. 5a and 6) in another embodiment.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have taps in an array of Freier et al. with the suggested device of Freier et al., since one would be motivated to incorporate this to generate light across the entire device (Fig. 6) as implied from Freier et al.

11. With regards to claim 11, Freier et al. suggests a device as recited above.

However, Freier et al. does not specifically disclose one tap having a length extending in a longitudinal direction of the waveguide larger than a width in the radial direction of the waveguide in this embodiment.

Freier et al. further discloses disclose one tap having a length extending in a longitudinal direction of the waveguide larger than a width in the radial direction of the waveguide (Fig. 4A) in another embodiment.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the tap having a length larger than a width of Freier et al. with the suggested device of Freier et al., since one would be motivated to incorporate this to generate significantly more light scattering (col. 4, lines 62-67) as implied from Freier et al.

12. With regards to claim 12, Freier et al. further discloses suggests a device as recited above.

However, Freier et al. does not specifically disclose a light source in this embodiment.

Freier et al. further discloses disclose a light source (Fig. 7, #116) in another embodiment.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have a light source of Freier et al. with the suggested device of Freier et al., since one would be motivated to incorporate this provide light (Fig. 7) as implied from Freier et al.

13. With regards to claim 15, Freier et al. further discloses the light source at least partially coherent (col. 6, lines 34, "lasers" which is inherently at least partially coherent).

14. With regards to claim 20, Freier et al. further discloses a laser light source (col. 6, lines 34).

15. Regarding claim 24, for purposes of being concise, Freier et al. suggests an apparatus as recited above.

However, Freier et al. does not disclose a continuous tap structure in this embodiment.

Freier et al. further teaches a continuous tap structure in another embodiment (Fig. 5A).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the continuous tap structure of Freier et al. with the suggested apparatus of Freier et al., since these two elements, the tap structure and continuous tap structure, are art-recognized equivalents as shown by Freier et al. (col. 5, lines 4-6). Therefore, because these two elements are art recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute a tap structure for a continuous tap structure. One would be motivated to use a continuous tap structure to increase the scattering of light for better light extraction and emission as implied from Freier et al. (col. 5, lines 15-19).

16. Regarding claim 36, Freier et al. suggests an apparatus as recited above.

However, Freier et al. does not disclose taps in a desired pattern in this embodiment.

Freier et al. further teaches taps in a desired pattern in another embodiment (Fig. 5A).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made to have the taps of Freier et al. with the suggested device of Freier et al., since one would be motivated to have these taps to increase scattering of light (col. 5, lines 14-19) in the illumination device as implied from Freier et al.

Art Unit: 2882

17. With regards to claims 38-41 and the taps being modeled by an iterative or theoretical process, the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, these limitations have not been given patentable weight.

18. Claims 2, 8, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freier et al. as applied to claim 1 above, and further in view of McGaffigan (US Patent 6031958).

19. Regarding claim 2, Freier et al. suggests an apparatus as recited above.

However, Freier et al. does not disclose creating a predetermined pattern generally spherical in shape.

McGaffigan teaches creating a predetermined pattern generally spherical in shape (Fig. 14A and 14B).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the spherical shape of McGaffigan with the suggested apparatus of Freier et al., since one would be motivated to have these patterns for light extraction purposes such as display signs or lamps for people to see as implied from McGaffigan (col. 12, lines 8-15).

20. Regarding claims 8 and 9, Allen et al. in view of Freier et al. suggests an apparatus as recited above.

However, Freier et al. does not disclose taps extending radially around or continuously circular.

McGaffigan teaches taps extending radially around or continuously circular (Fig. 2, #27).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have taps completely around of McGaffigan with the suggested apparatus of Freier et al. since one would be motivated to use these effects to create an optical illusion interpreting visible light originating from the center rather than the surface of the light pipe as implied from McGaffigan (col. 3, lines 40-47).

21. Claims 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freier et al. as applied to claim 12 above, and further in view of Koch (US Patent 4878157).

22. Regarding claim 13, Freier et al. suggests a device as recited above.

However, Freier et al. does not disclose a light source selectively controllable.

Koch teaches a light source selectively controllable (Title and Fig. 2, #27).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made to have a selectively controllable light source of Koch with the suggested devices of Freier et al., since one would be motivated to have this light source selectively controllable to turn the lights on and off as implied from Koch (Title and Fig. 2).

23. Regarding claim 14, Freier et al. in view of Koch suggests a device as recited above.

However, Freier et al. does not disclose light sources having varying illumination powers.

Koch teaches light sources having varying illumination powers (col. 1, lines 5-15).

Art Unit: 2882

It would have been obvious, to one having ordinary skill in the art at the time the invention was made to have varying illumination powers of Koch with the suggested device of Freier et al. in view of Koch, since one would be motivated to have this to create a desired effect for a Christmas tree as implied from Koch (Abstract) such as adding decoration.

24. Claims 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freier et al. as respectively applied to claims 12 and 27 above, and further in view of Mori (US Patent 4389085).

Freier et al. suggests an apparatus as recited above.

However, Freier et al. does not disclose incoherent, visible, UV, and infrared light.

Mori teaches incoherent light or sunlight which inherently has visible, UV, and infrared (Abstract, "sunlight").

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the incoherent light of Mori with the suggested apparatus of Freier et al. since one would be motivated to use advantageously use the incoherent light at a higher degree of efficiency in a lighting system to reach areas where direct access to incoherent light is impossible as implied from Mori (col. 2, lines 34-43).

Note that Kunert (US Patent 5092101) shows that sunlight inherently has visible, infrared, and UV light (col. 5, lines 52-58) in its spectrum.

25. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Freier et al. as applied to claim 20 above, and further in view of Izumi et al. (US Patent 5528399).

Freier et al. suggests an apparatus as recited above.

However, Freier et al. does not disclose semiconductor, high power, or light emitting diodes.

Izumi et al. teaches semiconductor, high power, or light emitting diodes (col. 18, lines 22-45).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have various diodes of Izumi et al. with the suggested apparatus of Freier et al. since these elements are art-recognized equivalents in that they are all diodes that emit light. Therefore, because these are art-recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute one type of diode for another. One would be motivated to use a high power diode for a high output as implied from Izumi et al. (col. 9, lines 20-25). One would be motivated to use a light emitting diode for a lower output (col. 9, lines 20-25). One would be motivated to use a semiconductor laser diode since it is relatively inexpensive (col. 18, lines 23-40).

26. Claims 25, 26, 37, 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al. (US Patent 5500913) in view of Freier et al. and Imen et al. ("Laser-fabricated fiber-optic taps").

27. Regarding claims 25 and 26, Allen et al. discloses an apparatus comprising one or more optical fibers or waveguides (Fig. 5, #200) and on or more tap structures (Fig. 5, #210 formed in

Art Unit: 2882

the optical fiber so that light travels through the fiber (Fig. 5) and an amount of light is output from the tap structure (Fig. 5, #210).

However, Allen et al. does not specifically disclose a fiber receiving light and optimization to 90%.

Freier et al. teaches a fiber receiving light (col. 5, lines 30-34). Imen et al. teaches optimization (Page 952, col. 1).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the fiber receiving light of Freier et al. with the apparatus of Allen et al., since one would be motivated to have this to send light through the fiber as implied from Freier et al. (Fig. 6).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have optimization of Imen et al. with the suggested apparatus of Allen et al. in view of Freier et al., since one would be motivated to have optimization for more directional output as implied from Imen et al. (Page 952, col. 1).

Secondly, it would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have optimization to 90%, with the suggested apparatus of Allen et al. in view of Freier et al. and Allen et al., since wherein the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. This is implied from Imen et al. (Page 952, col. 1). One would be motivated to have optimization for more directional output as implied from Imen et al. (Page 952, col. 1)

With regards to the taps being modeled or formed by using pattern parameters determined by modeling an illumination pattern configured for optimized light output, the

Art Unit: 2882

method of forming a device is not germane to the issue of patentability of the device itself.

Therefore, these limitations have not been given patentable weight.

28. Regarding claim 37, Allen et al. further discloses taps in a desired pattern (Fig. 10).

29. With regards to claims 42 and 43 and the taps being modeled by an iterative or theoretical process, the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, these limitations have not been given patentable weight.

30. Claims 27, 28, 44, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al. in view of Freier et al.

31. With regards to claims 27 and 28, Allen et al. discloses an apparatus comprising one or more light or photon (inherent) channeling structures (Fig. 5, #200) and on or more tap structures (Fig. 5, #210 formed in the photon channeling structure so that photons travels through (Fig. 5) and an amount of light is output from the tap structure by scattering (Fig. 5, #210).

However, Allen et al. does not specifically disclose a photon channeling structure receiving light

Freier et al. teaches a fiber receiving light (col. 5, lines 30-34).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have receiving light of Freier et al. with the apparatus of Allen et al.,

Art Unit: 2882

since one would be motivated to have this to send light through the photon channeling structure as implied from Freier et al. (Fig. 6).

With regards to the taps being modeled or formed by using pattern parameters determined by modeling a desired pattern, the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, these limitations have not been given patentable weight.

32. With regards to claims 44 and 45 and the taps being modeled by an iterative or theoretical process, the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, these limitations have not been given patentable weight.

33. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Allen et al. in view of Freier et al. as applied to claim 27 above, and further in view of Mori.

Allen et al. in view of Freier et al. suggests an apparatus as recited above.

However, Allen et al. does not disclose incoherent light.

Mori teaches incoherent light or sunlight.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to have the incoherent light of Mori with the suggested apparatus of Allen et al. in view of Freier et al. since one would be motivated to use advantageously use the incoherent light at a higher degree of efficiency in a lighting system to reach areas where direct access to incoherent light is impossible as implied from Mori (col. 2, lines 34-43).

Note that Kunert (US Patent 5092101) shows that sunlight inherently has visible, infrared, and UV light (col. 5, lines 52-58) in its spectrum.

Response to Arguments

34. The objections to the drawings, claims, and specification made in the Office Action filed 11/29/02 have been withdrawn in light of the amendment and proposed drawings.

35. Applicant's arguments with respect to claims 1-29 and 36-45 have been considered but are moot in view of the new ground(s) of rejection.

With regards to the arguments of modeled tap structures, the method of forming a device is not germane to the issue of patentability of the device itself. Therefore, these limitations have not been given patentable weight.

With regards to Freier et al., Freier et al. discloses scattering (col. 5, lines 15-19).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

Art Unit: 2882

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (703) 605-5298. The examiner can normally be reached on M - Th (8 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



gk
June 16, 2003



ROBERT H. KIM
SUPERVISOR / PATENT EXAMINER
TECHNOLOGY CENTER 2800